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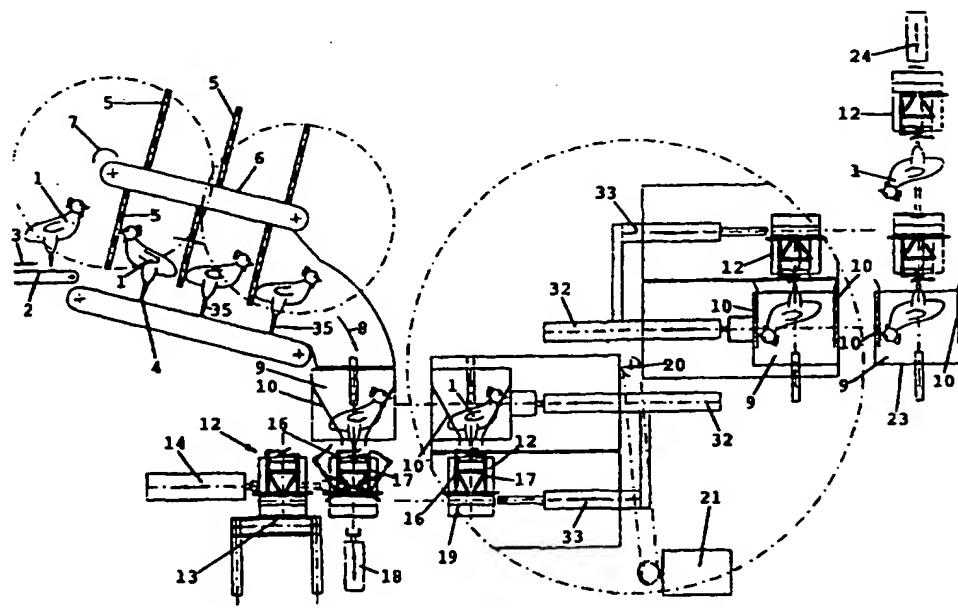
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(71)(72) Applicant and Inventor: KERSTHOLT, Herman [NL/NL]; J. de Withof 70, NL-5709 AK Helmond (NL).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).	
(74) Agents: LOUËT FEISSER, Arnold et al.; Arnold & Siedsma, Sweelinckplein 1, NL-2517 GK Den Haag (NL).		Published <i>With international search report. In English translation (filed in Dutch).</i>	

(54) Title: METHOD AND DEVICE FOR HANDLING CHICKENS



(57) Abstract

A method for handling chickens (1) or other kinds of poultry, wherein said chickens are moved to a position in which they hang by their legs. Each chicken is introduced into a compartment (9) comprising a limited amount of space, which compartment may be present in a container including one or more such compartments, and the container with the chicken or chickens present therein is moved. The chicken will thereby stand on a supporting surface (11) which is stationary with respect to the compartment, after which the legs (35) of the chicken are gripped by gripping elements (16, 17) while the chicken is standing on the supporting surface. In order to get into the compartment, the chickens are led through passages arranged in side-by-side relationship.

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METHOD AND DEVICE FOR HANDLING CHICKENS

5 The invention relates to a method for handling chickens or other kinds of poultry, wherein said chickens are moved to a position in which they hang by their legs. The term chickens used herein is also meant to include other kinds of poultry, to which the invention also relates.

10

Before chickens are slaughtered, they are hung by their legs, after which further processing, slaughtering included, takes place completely or almost completely automatically. Several attempts have been made to automate the hanging of 15 the chickens, because this is an unpleasant activity for people to carry out. Awkward movements have to be made and if these movements are carried incorrectly the chicken may be damaged, as a result of which their meat will be of a lower quality.

20

The object of the invention is to provide a method for handling chickens or other kinds of poultry, wherein the chickens are hung by their legs in a reliable manner, which method will be carried out completely automatically. This 25 is achieved by using the method as defined in the claims.

Preferably each chicken is introduced into a compartment comprising a limited amount of space, which compartment is present in a container including one or more such 30 compartments, and the container with the chicken or chickens present therein is moved. By placing each chicken separately in a compartment, a chicken can both be moved in a simple and reliable manner and be rotated about different axes by moving the container including the compartment in the 35 desired path.

Preferably a chicken is introduced into a compartment comprising a limited amount of space, which compartment may

be located within a container, whereby the chicken will come to stand on a supporting surface which is stationary with respect to said compartment, after which the legs of the chicken are gripped by gripping elements while the chicken 5 is standing on the supporting surface. In practice it has become apparent that a chicken tends to extend its legs in the direction of movement when being moved, and when the chicken subsequently feels a supporting surface, it will attempt to stand on said supporting surface. At that moment 10 the legs of the chicken will be present at a selected location, in a position in which they can be readily gripped. When the chicken comes to a standstill without feeling a supporting surface with its legs, it will draw up its legs.

15 Preferably a chicken is moved substantially downwards when being placed on the supporting surface, so that it will extend its legs in downward direction. This facilitates the gripping of the legs by the gripping element.

20 Preferably the chickens are placed in a delivery space and urged in a direction of transport within said delivery space, whereby each chicken lands in a respective one of a plurality of passages lying side by side, from which 25 passage the chicken is introduced into a compartment comprising a limited amount of space within a container. In this manner a compartment present within a container can be provided with a chicken in an efficient manner and at a relatively high rate, after which the legs of the chicken 30 can be gripped and/or the container can make the necessary movements.

The invention furthermore relates to a system for handling chickens or other kinds of poultry, which system comprises 35 means for moving chickens to a position in which they hang by their legs.

Preferably a compartment is so small and is enclosed in such a manner that the chicken cannot turn, so that the chicken will not be able to assume a position different from that in which it was introduced into the container.

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In one preferred embodiment chickens are introduced into several compartments simultaneously via passages lying side by side. Containers including one compartment each may thereby be placed in side-by-side relationship, whilst it 10 is also possible to use a container comprising a plurality of compartments arranged in side-by-side relationship. The number of passages lying side by side may thereby be equal to the number of compartments present within a container, so that chickens can be introduced simultaneously, one per 15 compartment, into each compartment of the container via each passage, which constitutes an efficient manner of filling a container.

Preferably the passage is so narrow that the chicken cannot 20 turn and can only be moved in its longitudinal direction, forwards or backwards, through the passage. The passage may thereby be slightly wider than the width of a chicken, in particular a width of 10 - 18 compartment, preferably 13 - 16 compartment, or another dimension adapted to the kind 25 of poultry in question.

Elements extending transversely to the direction of transport, for example finger-shaped elements or partitions, can be moved in the direction of transport so as to move 30 the chickens through the passage, whereby a chicken can be present between each pair of elements positioned one behind the other. A chicken can be delivered to the compartment at the desired moment by controlling the movement of the elements.

35

Preferably the bottom of the delivery space is formed by a conveyor belt which is capable of movement in the

direction of transport, which conveyor belt can urge the chickens in the direction of transport. This makes it possible to move the chickens from the delivery space to the passages lying side by side in an efficient manner. The 5 conveyor belt may also form the bottom of the passages thereby. Preferably the bottom of the delivery space and/or the bottom of the passages slopes downwards, which contributes to the moving of the chickens.

10 In one preferred embodiment detection means are provided, which detect whether a chicken is being moved forwards or backwards through a passage. Said detection means may be provided with optical means or other means which sense the contours of the passing chicken or of part of a chicken.

15 Furthermore it is possible thereby to use ultrasonic or infrared equipment or other sensors which are capable of recognizing chickens or selected parts of chickens. If the legs are being sensed, it will be possible to establish in which direction the toes are pointing, which is a reliable

20 basis for determining whether the chicken is being moved forwards or backwards.

In one preferred embodiment the stationary supporting surface can be moved between a position just below the 25 compartment and a position further away from said compartment. In the former position the supporting surface is fixed in a stationary position with respect to the compartment when the chicken enters the compartment, whilst the stationary supporting surface can be removed after the 30 legs of the chickens have been gripped by a gripping element.

In one preferred embodiment said gripping element comprises two movable gripping members, which move towards the legs 35 in substantially opposite directions, substantially parallel to the longitudinal direction of the chicken, and grip said legs. One gripping member may have a substantially straight

edge, and the other gripping member may have an edge provided with two recesses, which edges can be moved towards each other, so that each leg of the chicken will be positioned within a recess and be surrounded by said edges.

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The term longitudinal direction of the chicken, or of a respective other kind of poultry, is understood to mean the horizontal direction, from the front to the back, of a chicken in standing position.

10

In one preferred embodiment the compartment comprises a central opening at its bottom side, seen in the upright position of the container, through which the two legs of a chicken can extend. The gripping of the legs is facilitated by the fact that the legs extend outside the compartment. The term upright position of the container is understood to mean the position that the container occupies when the compartment or the compartments is or are being provided with a chicken or chickens.

15

Preferably a compartment has two substantially parallel side walls, which are spaced apart by a distance which substantially corresponds with the width of a chicken, that is, which is slightly larger than the width of a chicken, but which is not so wide that the chicken can turn around. Preferably said width is 10 - 18 compartment, in a preferred embodiment it is 13 - 17 compartment. In practice a width of about 15 compartment has appeared to be quite satisfactory.

20

In one preferred embodiment the compartment comprises two end walls, which converge in downward direction, seen in the upright position of the container, whereby the bottom edges of the two end walls are spaced apart by a distance which is less than half, preferably one-third, of the largest distance apart of the two end walls. The term end walls is understood to mean the walls which are positioned

substantially perpendicularly to the side walls of the compartment.

Preferably the compartment is provided with movable wall parts, which wall parts are in particular capable of movement when the chicken is being introduced into the compartment, or is to be moved to a particular position within said compartment, or is to be moved out of said compartment. Preferably the lower parts of the end walls of a compartment may thereby be capable of movement towards and away from each other.

In one preferred embodiment a gripping element is present for gripping the legs of a chicken that is present within a compartment, which gripping element is capable of movement from a position near said compartment to a position further away from said compartment, in order to move the chicken outside said compartment. The container can be turned upside-down together with said one or more gripping elements after the legs of a chicken have been gripped by the gripping element, and before said gripping element moves away from said compartment, so that the chicken will hang from the gripping element in upside-down position after leaving the compartment. Preferably the container is turned upside-down by being rotated about a substantially horizontal axis extending in the transverse direction of the compartment.

When a container is provided with a plurality of compartments arranged in side-by-side relationship in a row, said compartments are preferably oriented in such a manner that the direction of said row coincides with the transverse direction of the compartments. As a result of this the chickens present in the container will be positioned in side-by-side relationship.

Preferably the compartment comprises an opening at the upper side, seen in the upright position of the container, through which a chicken can be introduced into the compartment, whilst the compartment may also be completely open at its 5 upper side.

In one preferred embodiment containers are filled with chickens at several locations, which containers will subsequently be moved one behind the other in a row. This 10 makes it possible to increase the handling rate without said filling of the containers taking place so quickly that not every compartment is filled with a chicken.

If a container comprises only one compartment, it is 15 possible to rotate each chicken about a vertical axis, if desired, in order to position the chickens in side-by-side relationship, in which all chickens are oriented in the same direction.

20 If the containers are positioned side by side in a row when chickens are to be introduced into the containers, whereby the longitudinal direction of the compartment, and thus the longitudinal direction of the chicken, is transverse to the longitudinal direction of said row, the filling of the 25 compartments can take place in an efficient manner. In that position there is little space, however, for rotating the containers about a vertical axis so as to arrange the chickens in side-by-side relationship, with all chickens having the same orientation. In order to be able to rotate 30 the containers about a vertical axis when two containers are arranged in side-by-side relationship, one container is moved in its longitudinal direction with respect to the other container, so that the two containers are given sufficient space for rotating about a vertical axis. It is 35 also possible to move containers in vertical direction in order to obtain sufficient space.

If the direction in which chickens hanging from a hook or from gripping elements are oriented is to be determined, for example in order to turn chickens having the wrong orientation 180° about a vertical axis, said determining 5 of the orientation of a chicken can take place in an efficient and reliable manner by detecting to which side the toes are pointing. The ends of the legs present in the hook or the gripping element take up a fixed position, so that said detecting of the toes will be readily possible.

10

The invention furthermore relates to a container for accommodating one or more chickens or other kinds of poultry, said container comprising at least one compartment having such a length and width that it is capable of 15 containing only one chicken whose longitudinal direction substantially corresponds with the longitudinal direction of said compartment.

Further aspects of the invention, which may be used both 20 separately and in combination with each other, will be described hereafter with reference to the Figures or be defined in the claims.

In order to explain the invention more fully a few 25 embodiments of a device for handling chickens will be described with reference to the drawing.

Figure 1 shows the manner in which chickens are moved from a standing to a hanging position;

30 Figure 2 shows the manner in which the legs of a chicken are gripped;

Figure 3 is a side view of the gripping element of Figure 2;

35 Figure 4 shows a gripping element, from which a chicken is hanging;

Figures 5, 6 and 7 show devices for handling chickens; and Figure 8 shows a part of a device for handling chickens.

The various Figures are merely diagrammatic illustrations, wherein like parts are numbered alike.

Figure 1 shows chickens 1 being supplied via a conveyor belt 5 2 moving in the direction of arrow 3. Conveyor belt 2 may form the bottom of a delivery space, in which chickens 1 are placed in order to be moved in the direction of arrow 3 by means of conveyor belt 2. From said conveyor belt 2 the chickens 1 are transported on a sloping conveyor belt 10 4, where the chickens are positioned between respectively two successive partitions or bar-shaped projections (fingers) 5, which are secured to an endless member 6 moving in the direction indicated by arrow 7. By suitably attuning the velocity of conveyor belt 2 and that of the endless 15 element 6 to each other it is achieved that each space between two successive partitions 5 on conveyor belt 4 is filled with a chicken 1.

From conveyor belt 4 the chickens 1 are introduced into a 20 compartment 9 in the direction indicated by arrow 8. To that end compartment 9 comprises an opening at its upper side, as well as two end walls 10, which converge in downward direction. It is noted that chickens 1 are indicated 25 diagrammatically in the Figures, whereby it will be apparent that, although the drawing suggests otherwise, the chickens are present between end walls 10 and do not extend beyond the end wall.

Compartment 9 furthermore comprises two side walls, which 30 extend parallel to the plane of the drawing and which are spaced apart by a distance which is slightly larger than chicken 1, but which is so small that the chicken cannot turn.

35 When chicken 1 is being introduced into compartment 9, it will come to stand on a supporting surface 11 (Figure 3) present within a gripping element 12. Gripping elements 12

are moved to the place where compartment 9 is located via conveyor 13, for example a conveyor belt, in order to receive chickens 1. Moving element 14 moves gripping elements 12 one at a time from conveyor belt 13 to the place 5 where chicken 1 lands with its legs 35 in gripping element 12. The term "moving element" is understood to mean an element which may for example comprise a hydraulic driving cylinder or a linear motor, which is capable of moving one part of the system.

10

When gripping element 12 is moved under a compartment which stands in readiness, the two movable gripping members 16, 17 are moved apart by moving element 18, after which chicken 1 is introduced into compartment 9. The chicken tends to 15 extend its legs in the direction in which it is being moved, so that legs 35 of the chicken will be positioned on supporting surface 11, after which gripping members 16, 18 are moved together again, whereby they grip legs 35 (see Figure 2). Then compartment 9 and gripping element 12 are 20 moved to the right, to the position indicated at 19, by means of moving element 32 and moving element 33, after which gripping element 12 and compartment 9, are rotated about axis 20 extending perpendicularly to the Figure, with the drive being provided by driving motor 21.

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Gripping element 12 and compartment 9 will then be present at the position indicated at 22, after which they are moved to the right, to the place position at 23, by means of the same moving elements 32, 33.

30

A system of two moving elements 32 and two moving elements 33 rotates about said axis 20, so that a respective assembly of a compartment 9 and a gripping element 12 may be positioned at the bottom left (standing position) whilst 35 another assembly will at the same time be positioned at the top right (upside-down position).

In positions 22 and 23 the end walls 10 have been moved apart, so that chicken 1 can be removed in upward direction from compartment 9 by means of moving element 24.

5 After compartment 9 has been returned to position 22, said system will be rotated through 180° about axis 20 again, so that the compartment will take up position 19, in which it is provided with a gripping element 12 being moved by moving element 14, in order to subsequently receive a next 10 chicken 1.

The chicken 1, which has been removed from compartment 9 (top right in Figure 1) and which hangs from gripping element 12, can be transported along, whereby legs 35 of 15 the chicken are transferred to gripping hook 37, as is shown in Figure 4. Said transferring and transporting along is known per se.

Figure 2 shows a compartment 9 with gripping element 12 comprising gripping members 16, 18 positioned thereunder, which gripping members have gripped legs 35 of chicken 1, whilst said legs are positioned on stationary supporting surface 11. The open position of gripping element 12 is illustrated in dashed lines. The gripping element is 25 retained in its closed position by means of tension spring 36, and opened by means not shown.

Figure 3 is a side view of gripping element 12 shown in Figure 2.

30 Figure 4 shows gripping element 12, in which a chicken 1 is hanging, whereby a gripping hook 37 is present, to which chicken 1 is transferred when gripping members 16, 18 move apart, as is illustrated in the dashed lines.

35 Figure 5 shows an installation comprising three delivery stations 38, 39, 40, where the chickens can be introduced into delivery space 42 via space 41. Delivery space 42

consists of two portions, which each comprise a bottom in the shape of a conveyor belt, which moves the chickens in the direction of a plurality of passages 43 arranged in side-by-side relationship. The width of said passages 43 5 decreases in the direction of transport, so that the mouth of each passage is positioned at a compartment 9 of a container 44.

Each of said portions of delivery space 42 comprises ten 10 passages 43, by means of which a container 44 having ten compartments 9 can be provided with chickens in one go. After a container 44 has been filled, said container is moved to the right (seen in Figure 5), and subsequently moved in transverse direction to a turning device 45, in 15 which the complete container 45 can be turned through 180° about its horizontal longitudinal axis. The gripping elements that are positioned under the container 44 when said container is being filled will thereby be positioned at the upper side of the container. Said gripping elements 20 are thereby secured to container 44.

After being turned the containers are moved further to the right (seen in Figure 5), whereby the legs of the chickens are transferred to conveying means 46, which are provided 25 with gripping hooks. The legs of every one of the ten chickens present in a container 44 are simultaneously gripped by gripping hooks thereby, after which the container moves down as a whole, so that the chickens will be freely suspended from gripping hooks. Said transferring of the 30 chickens to gripping hooks 37 is shown in more detail in Figure 4.

The chickens are subsequently carried off in order to be slaughtered, whilst containers 44 will be moved to their 35 upright position via a turning device 47 and be carried to passages 43 in order to be filled again.

Since the filling of containers 44 with chickens 1 takes longer than the transfer of the chickens to the conveying means 46, the containers are filled at two locations simultaneously, whilst there is only one location where the 5 containers pass conveying means 46.

Containers 44 are moved in their path of movement by means of chains or other conveying means known per se, whereby the Figure shows diagrammatically the manner in which said 10 containers pass the turns.

Figure 6 shows an installation of different construction. This installation comprises one delivery station 38, where chickens can be delivered to the double delivery space 42, 15 which more or less corresponds with delivery space 42 of Figure 5. In Figure 6 only two passages 43 are provided at each end of delivery space 42, so that the ten compartments 9 of a container 44 are filled with chickens by moving the container the width of one compartment each time, whereby 20 two chickens are delivered each time. After having been moved five times container 44 will be filled with chickens. For the rest the installation according to Figure 6 functions similarly to the installation shown in Figure 5, the path followed by containers 44 is slightly different, 25 however. In the installation shown in Figure 6 containers 44 move in transverse direction to a position beside passages 43, so that a collection of containers 44 disposed side by side can form near passages 43.

30 Figure 7 shows an installation wherein sixteen passages 43 are provided in side-by-side relationship, so that sixteen chickens at a time can be placed in compartments 9. Said compartments may be separate compartments 9, or sixteen compartments present within one container. Said sixteen 35 compartments are moved sideways and turned as a whole about the axis 50 illustrated in chain-dotted lines, as indicated by arrow 51. After being moved further sideways to the

position indicated at 52, said compartments are moved along the chain-dotted line to device 53, where the legs of the chickens are transferred to conveying means 46 for further transport of the chickens. The chickens are thereby 5 transferred to conveying means indicated at 55 in device 54.

Then the containers move back to the position where they can be filled with chickens via chain-dotted line 56. 10 Furthermore the Figure diagrammatically shows device 57, where the chickens can be rotated through 180° about a vertical axis in order to ensure that all chickens will hang from the gripping hooks in one and the same orientation. The orientation in which the chickens are hanging from the 15 gripping hooks is thereby detected by sensing in which direction the toes of the chicken point. Because the legs of the chicken are hanging in a gripping hook, the toes will be present at a position which can be precisely determined, and detection of the toes can take place in a simple manner 20 by electronic means which are known per se.

Figure 8 shows a part of an installation wherein containers are moved turn by turn about over different distances after being filled with chickens in order to obtain space between 25 containers 9. This makes it possible to turn a chicken with the container through 180° about a vertical axis. The containers, which each comprise only one compartment, then move the chickens to an installation where they are turned through 180° about a horizontal axis in order to be hung 30 from gripping hooks in upside-down position.

The illustrated embodiments are only examples of implementing the invention, various other embodiments are possible.

CLAIMS

1. A method for handling chickens or other kinds of poultry, wherein said chickens are moved to a position in which they hang by their legs, characterized in that each chicken is introduced into a compartment comprising a limited amount of space, which compartment is present in a container including one or more such compartments, and the container with the chicken or chickens present therein is moved.
5
2. A method for handling chickens or other kinds of poultry, wherein said chickens are moved to a position in which they hang by their legs, characterized in that a chicken is introduced into a compartment comprising a limited amount of space, which compartment may be located within a container, whereby the chicken will come to stand on a supporting surface which is stationary with respect to said compartment, after which the legs of the chicken are gripped by gripping elements while the chicken is standing on said supporting surface.
15
3. A method for handling chickens or other kinds of poultry, wherein said chickens are moved to a position in which they hang by their legs, characterized in that a chicken is placed on a supporting surface by being moved downwards towards said supporting surface, after which the legs of the chicken are gripped while the chicken is standing on said supporting surface.
25
4. A method for handling chickens or other kinds of poultry, wherein said chickens are moved to a position in which they hang by their legs, characterized in that the chickens are placed in a delivery space and urged in a direction of transport within said delivery space, whereby each chicken lands in a respective one
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of a plurality of passages lying side by side, from which passage the chicken is introduced into a compartment comprising a limited amount of space within a container.

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5. A method according to any one of the claims 1 - 4, characterized in that chickens can be introduced into several compartments simultaneously via passages lying side by side.

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6. A method according to any one of the claims 4 - 5, characterized in that the number of passages lying side by side is equal to the number of compartments within a container, and that chickens are introduced simultaneously, one per compartment, into each compartment of the container via each passage.

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7. A method according to any one of the claims 4 - 6, characterized in that elements extending transversely to the direction of transport are moved in the direction of transport, whereby a chicken may be present between each pair of elements positioned one behind the other.

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25 8. A method according to any one of the claims 4 - 7, characterized in that the chickens are urged in the direction of transport by a conveyor belt moving in the direction of transport, which conveyor belt forms the bottom of at least part of the delivery space and/or which forms at least part of the bottom of said passages.

30

35 9. A method according to any one of the claims 4 - 8, characterized in that detection means establish whether a chicken is being moved forwards or backwards through a passage.

10. A method according to any one of the claims 2 - 9, characterized in that said stationary surface is positioned below said compartment when the chicken is
5 being introduced into said compartment.
11. A method according to any one of the claims 2 - 10, characterized in that said gripping element comprises two movable gripping members, which move towards the
10 legs in substantially opposite directions, parallel to the longitudinal direction of the chicken, and grip said legs.
12. A method according to claim 11, characterized in that
15 one gripping member has a substantially straight edge, and the other gripping member has an edge provided with two recesses, which edges are moved towards each other, so that each leg of the chicken will be positioned within a recess and be surrounded by said edges.
20
13. A method according to any one of the preceding claims, characterized in that parts of the wall of the compartment present within the container are moved apart in order to allow the chicken to pass.
25
14. A method according to any one of the preceding claims, characterized in that after the legs of a chicken present in a compartment within a container have been
30 gripped by a gripping element, said gripping element and said container are moved apart, whereby the chicken is moved outside the container.
- 135 15. A method according to any one of the preceding claims, characterized in that after the legs of a chicken present in a container have been gripped by a gripping element, said container comprising one or more

compartments is turned upside-down together with said gripping element.

16. A method according to any one of the preceding claims,

5 characterized in that a container is turned upside-down by rotating said container through 180 degrees about a substantially horizontal axis, which extends substantially perpendicularly to the longitudinal direction of a compartment.

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17. A method according to any one of the preceding claims,

characterized in that a chicken is introduced into said compartment via an opening at the upper side of said compartment, seen in the upright position of said container.

15

18. A method according to any one of the preceding claims,

characterized in that containers are filled with chickens at several locations, and that subsequently 20 the filled containers are moved one behind the other in a row.

20

19. A method according to any one of the preceding claims,

characterized in that a container comprises only one 25 compartment, which container is rotated through 180 degrees about a vertical axis, depending on the position of the chicken within said compartment.

25

20. A method according to claim 19, characterized in that

30 said containers are disposed in side-by-side relationship in a row when chickens are being introduced into said containers, whereby the longitudinal direction of said compartment, and thus the longitudinal direction of said chicken, is 35 transverse to the longitudinal direction of said row.

35

21. A method according to claim 19 or 20, characterized in that one of two containers disposed side by side in a row, with the longitudinal direction of said compartments being transverse to the longitudinal direction of said row, is moved in its longitudinal direction with respect to the other container, so that the two containers are given sufficient space for being rotated about a vertical axis.

10 22. A system for handling chickens or other kinds of poultry comprising means for moving said chickens to a position in which they hang by their legs, characterized by containers which each comprise one or more compartments, whereby each compartment forms 15 a limited space, in which only one chicken can be present, and by means for moving said container and said chicken or chickens present therein.

20 23. A system for handling chickens or other kinds of poultry comprising means for moving said chickens to a position in which they hang by their legs, characterized by means for introducing a chicken into 25 a compartment comprising a limited amount of space, which compartment may be located within a container, and by a supporting surface which is stationary with respect to said compartment, on which the chicken can stand, and by gripping elements which are capable of gripping the legs of the chicken while the chicken is standing on the supporting surface.

30 24. A system for handling chickens or other kinds of poultry comprising means for moving said chickens to a position in which they hang by their legs, characterized by a delivery space in which chickens 35 can be placed, and by means for urging the chickens in a direction of transport, and by a plurality of passages lying side by side, which each extend from

said delivery space to a compartment comprising a limited amount of space within a container.

25. A system according to any one of the claims 22 - 24, characterized in that said compartment is so small and is enclosed in such a manner that the chicken cannot turn
- 10 26. A system according to any one of the claims 24 - 25, characterized in that the number of passages lying side by side is equal to the number of compartments within a container, and that chickens can be introduced simultaneously, one per compartment, into each compartment of the container via each passage.
- 15 27. A system according to any one of the claims 24 - 26, characterized in that the passage is so narrow that the chicken cannot turn and can only be moved in its longitudinal direction, forwards or backwards, through the passage.
- 20 28. A system according to any one of the claims 24 - 27, characterized in that elements extending transversely to the direction of transport are present within said passage, which elements can be moved in the direction of transport, whereby a chicken can be present between each pair of elements positioned one behind the other.
- 25 29. A system according to any one of the claims 24 - 28, characterized in that at least part of the delivery space and/or at least part of the bottom of said passages is made up of a conveyor belt which can move in the direction of transport and which is capable of urging the chickens in the direction of transport.
- 30 35 30. A system according to any one of the claims 24 - 29, characterized in that at least part of the delivery

space and/or at least part of the bottom of said passages slopes down in the direction of transport.

31. A system according to any one of the claims 24 - 30, characterized in that detection means are provided near said passage for detecting whether a chicken is being moved forwards or backwards through a passage.
- 5 32. A system according to any one of the claims 23 - 31, characterized by means for moving said stationary supporting surface between a position just below the compartment and a position further away from said compartment.
- 10 33. A system according to any one of the claims 23 - 32, characterized in that said gripping element comprises two movable gripping members, which can move in substantially opposite directions, parallel to the longitudinal direction of the chicken, near said supporting surface and with respect thereto, so as to grip the legs of a chicken.
- 15 34. A system according to claim 33, characterized in that one gripping member has a substantially straight edge, and the other gripping member has an edge provided with two recesses, which edges are moved towards each other, so that each leg of the chicken will be positioned within a recess and be surrounded by said edges.
- 20 35. A system according to any one of the claims 22 - 34, characterized in that the compartment comprises a central opening at its bottom side, seen in the upright position of the container, through which the two legs of a chicken can extend.
- 25
- 30
- 35

36. A system according to any one of the claims 22 - 35, characterized in that said compartment comprises two substantially parallel side walls, which are spaced apart by a distance which substantially corresponds
5 with the width of a chicken

37. A system according to any one of the claims 22 - 36, characterized in that said compartment comprises two end walls, which converge in downward direction, seen
10 in the upright position of the container.

38. A system according to claim 37, characterized in that the bottom edges of said two end walls are spaced apart by a distance which is less than half, preferably one-third, of the largest distance apart
15 of the two end walls.

39. A system according to any one of the claims 22 - 38, characterized in that parts of the wall of the compartment present within the container can be moved apart in order to allow the chicken to pass.
20

40. A system according to claim 39, characterized in that at least the lower parts of the end walls of a compartment are capable of movement towards and away
25 from each other.

41. A system according to any one of the claims 22 - 40, characterized in that a gripping element is present
30 for gripping the legs of a chicken that is present within a compartment, which gripping element is capable of movement from a position near said compartment to a position further away from said compartment, in order to move the chicken outside said compartment.
35

42. A system according to any one of the claims 22 - 41, characterized by means for turning a container upside-down together with a gripping element gripping the legs of a chicken present within said container.

5

43. A system according to any one of the claims 22 - 42, characterized in that a container comprises a plurality of compartments arranged in side-by-side relationship in a row.

10

44. A system according to claim 43, characterized in that the longitudinal direction of said compartments, and thus the longitudinal direction of the chickens present within said compartments, is transverse to the longitudinal direction of the container, which latter longitudinal direction is the direction of said row.

15

45. A system according to any one of the claims 22 - 44, characterized by a means for rotating a container through 180 degrees about a substantially horizontal axis, which extends substantially perpendicularly to the longitudinal direction of a compartment.

20

46. A system according to any one of the claims 22 - 45, characterized in that said compartment comprises an opening at the upper side, seen in the upright position of said container, through which a chicken can be introduced into said compartment.

25

30

47. A system according to any one of the claims 22 - 46, characterized in that said compartment is almost completely open at its upper side, seen in the upright position of the container.

35

48. A system according to any one of the claims 22 - 47, characterized in that containers can be filled with chickens at several locations, and that means are

present for placing the filled containers one behind the other in a row and moving them in the direction of said row.

5 49. A system according to any one of the claims 22 - 48, characterized in that a container comprises only one compartment, and that means are present for rotating the container through 180 degrees about a vertical axis, depending on the position of the chicken within 10 said compartment.

50. A system according to claim 49, characterized in that the containers are positioned side by side in a row when chickens are being introduced into the containers, whereby the longitudinal direction of the compartment, and thus the longitudinal direction of the chicken, is transverse to the longitudinal direction of said row. 15

20 51. A system according to claim 49 or 50, characterized in that one of two containers disposed side by side in a row, with the longitudinal direction of said compartments being transverse to the longitudinal direction of said row, can be moved in its longitudinal direction with respect to the other container, so that the two containers are given sufficient space for being rotated about a vertical 25 axis.

30 52. A container for accommodating one or more chickens or other kinds of poultry, said container comprising at least one compartment having such a length and width that it is capable of containing only one chicken whose longitudinal direction substantially corresponds 35 with the longitudinal direction of said compartment.

53. A container according to claim 52, characterized in that said container comprises a plurality of compartments arranged in a row, whose longitudinal direction is transverse to the direction of said row.

5

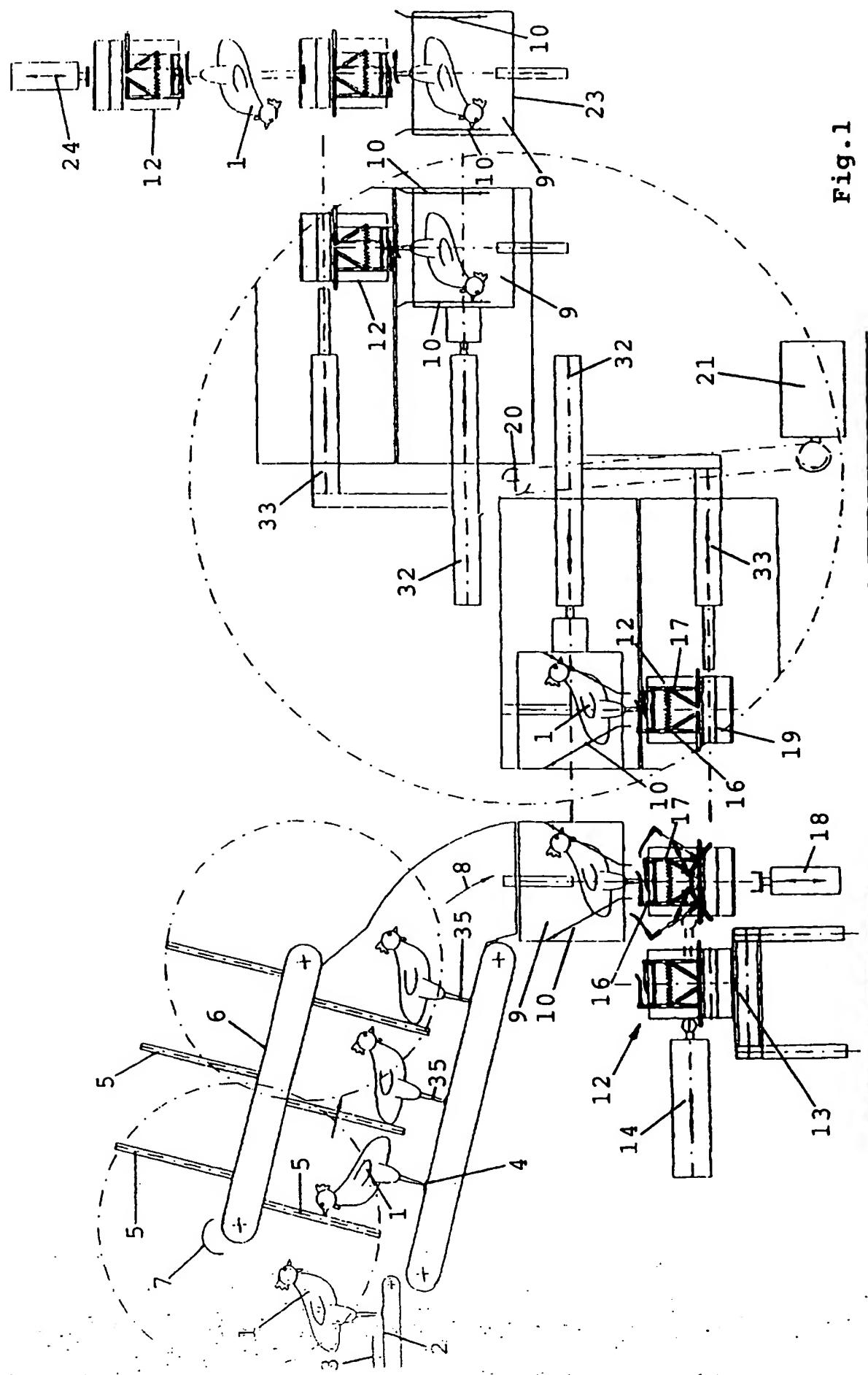
54. A container according to claim 52 or 53, characterized in that the end walls of each compartment slope downwards towards each other.

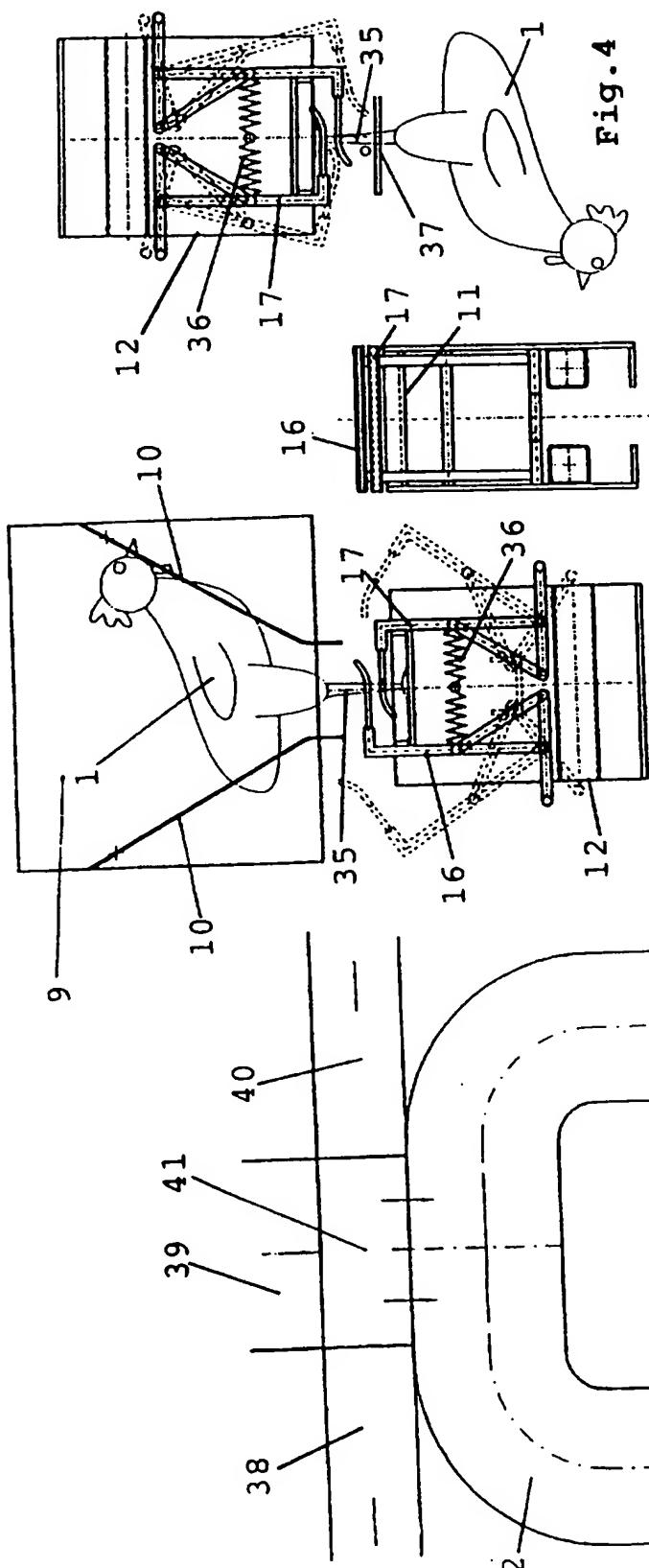
10 55. A container according to any one of the claims 52 - 54, characterized in that at least parts of said end walls are capable of movement in such a manner that at least the bottom sides of said end walls can move towards and away from each other.

15

56. A container according to any one of the claims 52 - 55 for carrying out the method according to any one of the claims 1 - 21 or for being used in the system according to any one of the claims 22 - 51, said container including one or more of the features according to any one of the preceding claims.

20





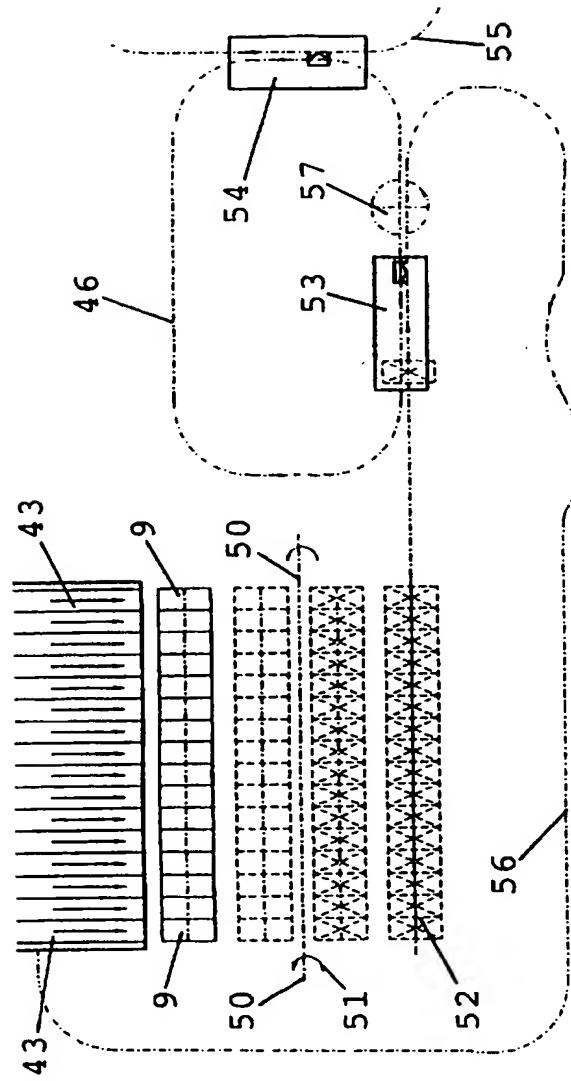


Fig. 7

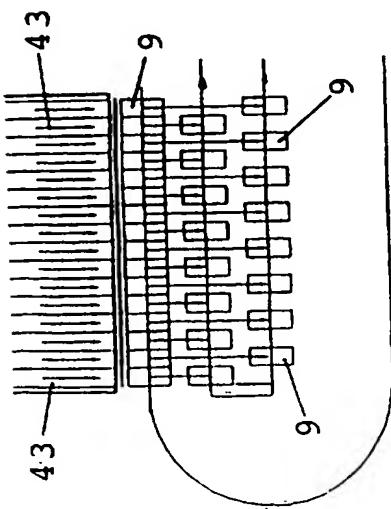


Fig. 8

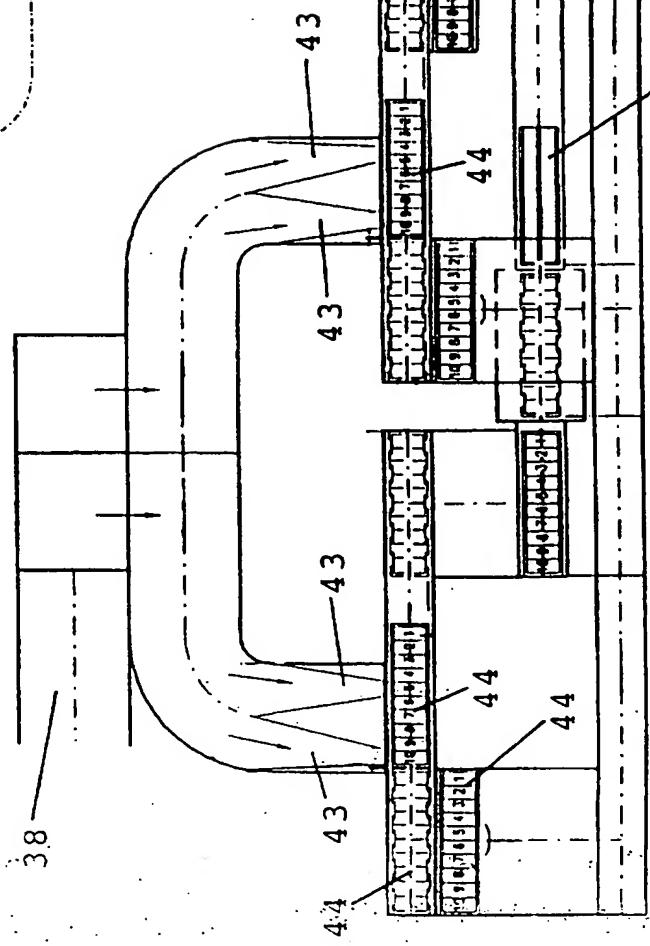


Fig. 6

Fig. 7

Fig. 8

INTERNATIONAL SEARCH REPORT

International Application No
PCT/NL 97/00296

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A01K45/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A01K A22B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 301 770 A (PARKER JR ALONZO E) 24 November 1981 see the whole document ---	1-8,14, 20, 22-29, 33,35, 36,41, 43,44
A	NL 9 201 061 A (JOHANNUS ALBERTUS DERKS) 3 January 1994 see the whole document ---	1,4,7,8, 22
A	EP 0 533 288 A (MEYN MASCHF) 24 March 1993 see column 4, line 29 - column 5, line 10 --- -/-	9,19,31

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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1

Date of the actual completion of the international search

1 September 1997

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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl
Fax. (+ 31-70) 340-3016

Authorized officer

De Lameillieure, D

INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 97/00296

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 94 19957 A (POUTECH A S ;NIELSEN HOLGER HJORT (DK); SORENSEN TORBEN BRANDT (DK) 15 September 1994 see the whole document ---	10,14,24
A	US 4 232 632 A (KICE JACK W) 11 November 1980 see column 4, line 41 - line 51 ---	17,37, 39,40, 54,55
A	FR 2 426 625 A (ALLARD JEAN) 21 December 1979 see the whole document ---	52,53,56
A	EP 0 145 077 A (BRINK HENDRIKUS GERRIT DEN) 19 June 1985 -----	

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte. ial Application No

PCT/NL 97/00296

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
US 4301770 A	24-11-81	US 4215654 A		05-08-80
		US 4272863 A		16-06-81
		US 4307683 A		29-12-81
NL 9201061 A		NONE		
EP 0533288 A	24-03-93	NL 9101585 A		16-04-93
		AT 132001 T		15-01-96
		AU 2522092 A		25-03-93
		CA 2078611 A		21-03-93
		DE 69207129 D		08-02-96
		DE 69207129 T		27-06-96
		US 5370574 A		06-12-94
WO 9419957 A		AU 6202094 A		26-09-94
		EP 0689382 A		03-01-96
		EP 0779028 A		18-06-97
		JP 8507213 T		06-08-96
US 4232632 A		NONE		
FR 2426625 A		NONE		
EP 0145077 A	19-06-85	NL 8304072 A		17-06-85
		CA 1234460 A		29-03-88
		JP 1403964 C		09-10-87
		JP 60192540 A		01-10-85
		JP 62010129 B		04-03-87
		US 4658476 A		21-04-87